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SELECTION AND SHIPMENT OF PLANT SPECIMENS FOR DIAGNOSIS OR IDENTIFICATION

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The purpose of this bulletin is to give information concerning the selection, preparation, packing and shipping of diseased plants or plant parts for diagnosis and plants and fleshy fungi for identification. If the following methods are followed, a correct reply can be expected in the shortest time. Often, additional specimens are requested because the first shipment received at the laboratory arrived in poor condition or in insufficient quantities. If the material is in poor condition or poorly selected, the chances for error are greatly increased, provided any conclusions at all can be reached. The sender should bear in mind that the specimens and information provided by the sender are the only guides for the technician in the laboratory.

SELECTION OF SPECIMENS:—Diseased plants should be removed from the soil with care to retain portions of the root system. This is particularly true of seedlings of all kinds. They are small and easily handled, and usually diseases that affect them are caused by soil-inhabiting organisms.

Annuals that are older and have developed considerable top growth may show the diseases on either the roots or leaves or both. Plants of this age that have diseased roots or stems usually show a wilt of the foliage, whereas plants having only diseased foliage seldom show much wilting. For this reason the entire plant should be sent if not too large. It is not necessary, however, to send the entire top growth of large plants, such as a bearing watermelon, when the root and a single runner will be sufficient. A large number of diseases of annual plants are confined to the stems, foliage or fruit and are noticeable because of discolored areas or spots. There may or may not be a yellowing of the leaves and, except for these spots, the plants may appear healthy. In such cases a number of leaves or several leafy stems are all that is necessary. A number of diseases are found on the fruits and, even though they are present on the foliage, they may be overlooked until harvest. In such cases the fruits alone may constitute adequate specimens.

Grasses often show various diseases. Cylinders of sod several inches thick are often received for a diagnosis of a disease on the grass blades. In most instances a number of individual plants without the soil is sufficient. Diseased grass from lawns and golf courses should be selected in the early morning along the margin of healthy and dead areas. In other cases collections can be made when convenient and only the leaves and stems are necessary.

Woody plants, such as citrus trees or ornamental shrubbery, often show diseases on certain branches and twigs. The first cut should be made in

healthy tissue between the main stem and the diseased portion. This will remove the diseased parts from the plant and they can be further prepared for packing if necessary. A small portion of healthy tissue between the disease and the main stem showing the margin of the diseased area is desirable.

Soil samples are of little value in diagnosing, determining or predicting the possible cause of plant disease.

Fleshy fungi, including all mushrooms, should be selected in different stages of development, packed carefully after collection and shipped immediately. They deteriorate very rapidly and require most careful and speedy handling. If more than one kind should be sent, each one should be numbered and a duplicate set kept for reference when the reply is received.

Weeds, native and introduced plants, and **shrubs and trees** sent for identification should be numbered and duplicates kept for reference if more than a single plant is sent. The complete plant is always very desirable, because roots often aid materially in identification. Plants selected should be in blossom if possible. If the plant is large, select several leafy branches with attached flowers. When flowers are not available, secure seeds or fruit attached to leafy branches. Identifications can often be made from leafy branches without flowers or fruit, but the possibility of error is greater with such specimens. Separate leaves are often difficult to recognize and should not be sent without flowers or fruit except in emergencies. The specimens, several of each plant, should be typical of that plant. A letter should accompany the shipment stating whether the specimens were taken from shrubs or trees, wild or cultivated, and description of fruit or flowers, if both do not accompany the leafy branches.

PREPARATION FOR SHIPMENT:—All soil should be washed from the roots of specimens. The freshness of plants can be maintained by packing the roots or cut stems with wet, crumpled newspaper or sphagnum moss and covering with an oiled paper. Other types of specimens need no special preparation, except that they should show several stages of development of the disease if possible. The packing process is very important because it determines whether the specimen is recognizable when received. Specimens for mail shipment should be placed in boxes or strong cartons and all unoccupied space should be filled with crumpled paper, excelsior or moss to prevent the contents from moving about when shaken vigorously. No specimens should be placed in envelopes for letter mail without reinforcement. Wrap and tie the package securely and address plainly to the Plant Pathology Department, Experiment Station, Gainesville, Fla., with legible address of the sender. All specimens should be accompanied by a letter giving information not manifested by the specimens.

EXPECTANCY OF REPLY:—When specimens arrive in good condition and in large enough quantities, diagnosis and recommendations usually can be made immediately and the sender will be informed by return mail. When the condition of the specimens is poor, caused by being loose in a box of soil or badly crushed or dried on account of little protection in an envelope, immediate determination is impossible. Often additional specimens must be requested in such cases. Some diseases may be uncommon and certain laboratory methods must be applied, which may require several days before the disease can be identified and information supplied. A second request should be made after a week or 10 days, if no reply is obtained from the first. Delays in transit and at destination often occur on account of faulty addresses and illegible return addresses.